addition, a financial support up to 50% of the project cost, limited to Rs. 3.0 crore per MW, is also provided for setting up innovative demonstration projects on emerging technologies/ packages. Under a separate project of the Ministry assisted by United Nations Development Programme/Global Environmental Facility (UNDP/GET), on "Development of High Rate Biomethanation Processes", 16 demonstration sub-projects based on Sewage (3 nos.), effluents from Pulp and Paper industries (2 nos.), Vegetable Market Yard wastes (3 nos.), effluents from Leather industries abattoirs (5 nos.) and biogas utilization for power generation (3 nos.) are being set up in the country, with 50% cost-sharing by the Ministry.

(b) 43 proposals have been received so far for setting up "Waste to Energy Projects" under the above programmes. City-wise break-up of these proposals, is given in Statement (*See* below)

(c) The capital cost of projects for energy recovery from wastes, ranges from Rs. 3.0 crores to Rs. 9.0 crores per MW and cost of production of energy ranges between Rs. 1.50 and Rs. 3.50 per kilo-watt-hour.

Statement

City-wise break-up of the proposals received for Waste to Energy Projects

Sl No.	State	City	No. of Proposals received (Nos.)
1.	Andhra Pradesh	Hyderabad	2
		Vijayawada	3
		Srikakulam	1
		Tanuku	1
		Medak	2
2.	Tamilnadu	Chennai	3
		Salem	1
3.	Uttar Pradesh	Kanpur	1
		Lucknow	2
		Faizabad	2
		Agra	1
		Dhampur	1
4.	West Bengal	Kamarhaty	1
5.	Haryana	Gurgaon	1
6.	Tripura	Agartala	1
7.	Madhya Pradesh	Bhopal	3
		Dewas	1
8.	Maharashtra	Kalyan	1
		Solapur	1
		Nagpur	1
		Kolhapur	1
		Thane	1
		Pune	1
9.	Punjab	Muktsar	1
10.	Orissa	Bhubaneshwar	1
11.	Jammu &Kashmir	Jammu	1
12.	Karnataka	Bangalore	1
		Belgaum	1
13.	Kerala	Kochi	1
14.	Bihar	Patna	1
15.	Himachal Pradesh	Shimla	1
16.	Delhi	Delhi	1
17.	Gujarat	Surat	1

Generation of Power Through Non-Conventional Sources

539. PROF. RAM KAPSE: Will the Minister of NON-CONVENTIONAL ENERGY SOURCES be pleased to state:

(a) whether Government are contemplating to generate power through non-conventional sources by ninth plan end; and

(b) if so, the quantum and the cost involved?

THE MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES (CAPT. JAI NARAYAN PRASAD NISHAD): (a) and (b) A target of 3000 MW of additional power generation capacity has

been proposed for the 9th Plan period from various non-conventional energy sources such as wind, small hydro, biomass and solar energy. An investment of about Rs. 14,000 crore will be required for the establishment of this capacity. The Ninth Plan physical and financial targets are yet to be finalised.

New Technology for Wind Generators

540. SHRI VEDPRAKASH P. GOYAL: Will the Minister of NON-CONVENTIONAL ENERGY SOURCES be pleased to state:

(a) whether Government are aware that the tripping of each of the five 210 MW units of the Tuticorin Thermal Power Station on 30th May, 1997 turned the spot light on the need for new technology for wind generators;

(b) if so, whether Government have made any study in this regard;

(c) what are the details of the study made alongwith results thereof;

(d) whether it is a fact that Government of India had a technical consultancy agreement with a European firm in the field of wind energy;

(e) the details of the projects installed on their advice and in pipelines; and

(f) the performance reports of the projects already completed with details?

THE MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES (CAPT. JAI NARAYAN PRASAD NISHAD): (a) The tripping of the five units of the Tuticorin Thermal Power Station cannot alone be attributed to the operation of wind electric generators installed in the area. The Southern grid tripped on account of the overloading of the system and typical under frequency grid conditions. The wind electric generators which were already connected to the grid while generating active power continued to draw the reactive power required for their operation. The Tuticorin Thermal Power Station would have tripped in cascade since it could not supply the reactive power requirement of wind farms along with other loads connected to it, although it was augmented by power generated by the wind farms. With the introduction of power factor compensators, or variable speed operation for active and reactive power control, the reactive power requirement of wind electric generators can be minimised.

(b) and (c) An R&D project has been taken up for suitable modifications in wind electric generators using induction generators, which will enable the reactive power requirements of such machines to be minimised. Tamil Nadu Electricity Board have also taken up a Study by Anna University on remedial measures for excessive drawal of reactive power by such wind electric generators. The Study has not so far been completed. Meanwhile, several interim measures have taken to improve the power factor and minimise reactive power drawal from the grid.

(d) No, Sir.

(e) Does not arise.

(f) An aggregate wind power capacity of about 900 MW has been installed in the country. Over 2 billion units have so far been fed to the grid from these projects. By and large, the performance of the wind power projects has been found to be satisfactory.

Setting up Asia's Largest Solar Plant Project at Kalyanpur

541. SHRI SUSHIL KUMAR SAMBHAJIRAO SHINDE: SHRIMATI VEENA VERMA:

Will the Minister of NON-CONVENTIONAL ENERGY SOURCES be pleased to state:

(a) whether wind and solar energy is projected to be harnessed with a view to substantially diversify and conserve the conventional energy resources;